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Trends in Equine Mortality, 1998–2005

One priority in the U.S. Department of Agriculture's National Animal Health Monitoring System's (NAHMS) Equine 2005 study was to compare changes in the equine industry from 1998 to 2005 in relation to equine death events.

For the Equine 2005 study, NAHMS collected data on equine health and management practices from a representative sample of operations with 5 or more equids in 28 States within four regions.* The 28-State target population represented 78.0 percent of equids and 78.6 percent of operations with 5 or more equids in the United States. Interviews were conducted from July 18 through August 12, 2005, and 2,893 equine operations provided data on equine health and management.

Some estimates in this information sheet are compared to estimates from Equine '98, NAHMS' previous study of the U.S. equine industry. For the evaluation of changes and trends, the data used to generate estimates based on the Equine '98 study were re-analyzed to represent operations with five or more equids present on January 1, 1998. Therefore, estimates for comparing the 2 study periods are based on 3 points of commonality: same 28 States, data collection performed by National Agricultural Statistics Service enumerators, and same reference population of 5 or more equids.

Of operations participating in the Equine 2005 study, 40.3 percent identified their primary function as "farm/ranch" and 37.0 percent identified their primary function as "residence with equids for personal use." A resident equid was defined as an equid that spent or was expected to spend more time at the operation than at any other operation during the previous 12 months, whether or not it was present at the time of the interview. The operation was its home base.

Participants in the Equine 2005 study were asked to provide information on deaths among their resident equids during the previous 12 months. Owner/operators were asked about the number of deaths (including euthanasia) and the underlying causes of these deaths for three age groups: birth to 30 days, 30 days to 6 months, and 6 months and older. Cause of death was reported by the owner/operator and not necessarily confirmed by a veterinarian.

Foal deaths

Overall, the percentages of foals born alive that died within the first 30 days of life were similar in 1998 and 2005, 4.2 and 4.9 percent respectively. Of these deaths, about half occurred within the first 2 days of life in both 1998 and 2005 (table 1). There was a decrease in percentage of foal deaths from 1998 to 2005 attributed to unknown and "other" causes (figure 1).

Table 1. For foals born alive, percentage of foals that died in the first 30 days of life (including those born on or moved onto the operation) during the previous 12 months, by age at death (in days):

	Percent Foals	
	1998	2005
Age at Death (Days)	**Percent**	**Percent**
2 or less	2.0	2.6
3 to 30	2.2	2.3
Total	4.2	4.9

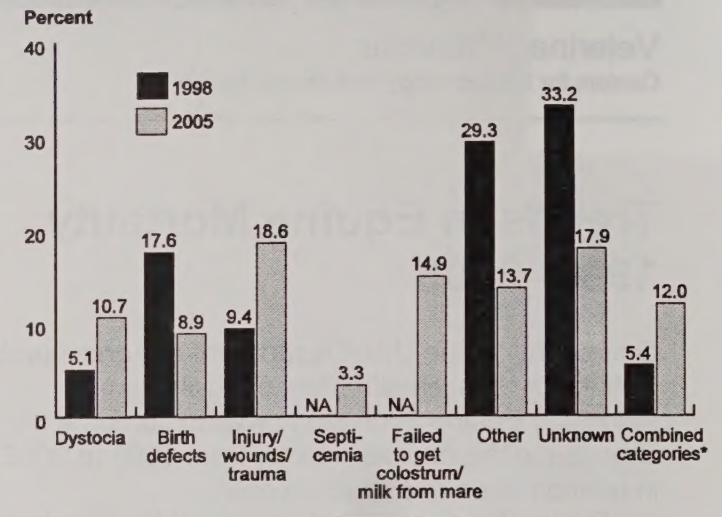
*Regions:
West: California, Colorado, Montana, New Mexico, Oregon, Washington, and Wyoming
Northeast: New Jersey, New York, Ohio, and Pennsylvania
South: Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Oklahoma, Tennessee, Texas, and Virginia
Central: Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, and Wisconsin

The difference in other causes of death can most likely be attributed to the addition in the 2005 study questionnaire of two new cause-of-death categories: infectious disease unrelated to specific body system, blood infection (septicemia); and failure to get colostrum or milk from the mare. These additions allowed owner/operators to better categorize known causes of death and may have led to the decrease in deaths reported as unknown. Together, the two new cause-of-death categories accounted for 18.2 percent of deaths in 2005. Unknown causes of death dropped from 33.2 percent in 1998 to 17.9 percent in 2005.

In 1998, other than unknown and other causes of death, birth defects accounted for the highest percentage of foal deaths (17.6 percent), followed by injury/wounds/trauma unrelated to birth (9.4 percent) and dystocia, trauma, or complications at birth (5.1 percent). In 2005, excluding unknown and other causes of death, injury/wounds/trauma unrelated to birth accounted for the highest percentage of foal deaths (18.6 percent), followed by failure to get colostrum or milk from mare (14.9 percent), and dystocia, trauma, or complications at birth (10.7 percent) (figure 1). In 1998, "other" reported known causes of foal death included prematurity, lack of milk or colostrum production by mare, exposure, drowning, and infection. In 2005 "other" known causes of foal death included predator attacks and adverse environmental conditions.

Since injury/wounds/trauma is one of the leading causes of foal deaths in foals during the first 30 days of life, it may be possible to reduce the overall percentage of deaths in this age category because injury/wound/trauma is a potentially preventable cause of death.

Figure 1. For Foals Born Alive, Percentage of Foal Deaths During the First 30 Days of Life, by Cause of Death and by Year



*Combined categories include colic (0.2%,1.5%), other digestive (0.6%, 6.4 %), respiratory (1.5%, 3.6 %), and neurologic problems (3.1%, 0.5 %)

Equid deaths

Overall, the percentages of equids more than 30 days of age that died in 1998 and 2005 were similar (2.0 and 1.8 percent, respectively). The highest mortality rates were found in equids aged 20 years and or more in both 1998 and 2005 (11.9 and 10.2 percent, respectively). Mortality rates for equids more than 30 days but less than 20 years of age were eight to nine times lower than that of equids 20 years or older (Table 2).

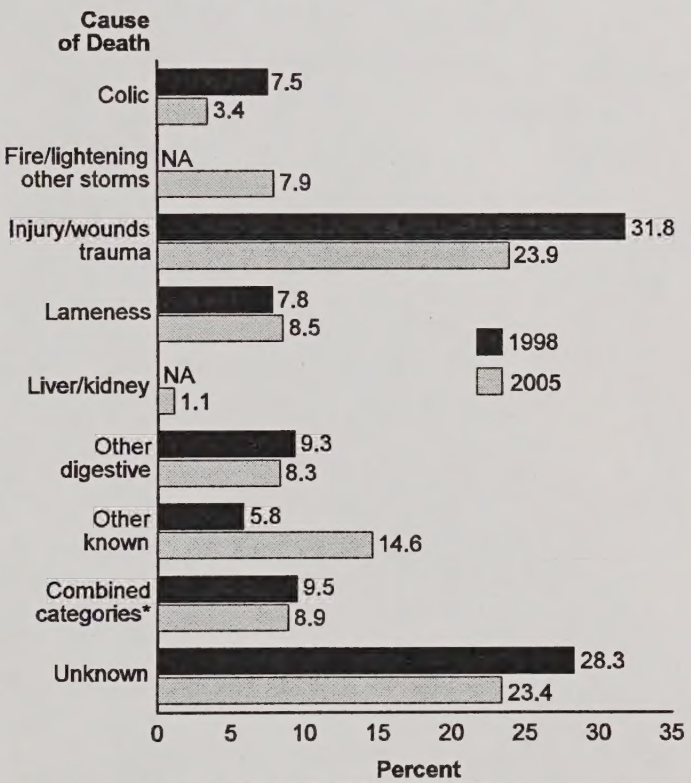
Table 2. Percentage of resident equids more than 30 days of age that died or were euthanized during the previous 12 months, by age:

	Percent Resident Equids*	
	1998	2005
Age at Death	Pct.	Pct.
More than 30 days but less than 6 months	1.4	1.2
6 months to less than 5 years	1.5	1.1
5 years to less than 20 years	1.4	1.2
20 years or older	11.9	10.2
Total deaths of equids more than 30 days of age	2.0	1.8

*(Number of resident equids that died or were euthanized) x 100/age class of resident equine inventory.

Overall, for equids more than 30 days to less than 6 months of age, the percentages of deaths attributed to a specific cause were similar in 1998 and 2005 (figure 2). Injury/wounds/trauma accounted for the highest percentage of deaths among these equids in 1998 and 2005. Injury/wounds/trauma is a potentially preventable cause of death, and lowering the number of deaths in this category would decrease the overall percentage of deaths among this age group. In addition, approximately one in four deaths among equids aged more than 30 days to less than 6 months were attributed to unknown causes in 1998 and 2005. Identifying a higher percentage of these unknown causes would allow owners/operators to take precautions that could lead to fewer deaths.

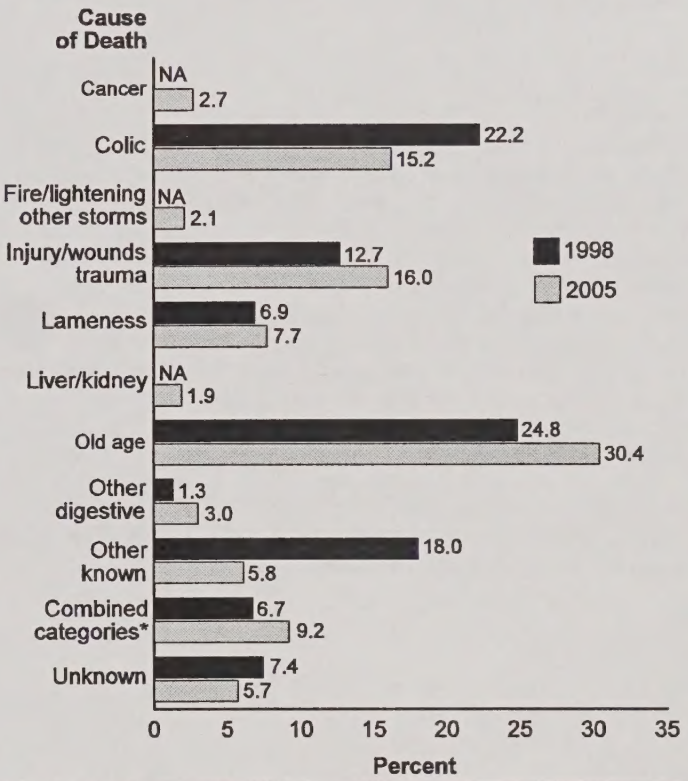
Figure 2. For Equids More Than 30 Days to Less Than 6 Months of Age, Percentage of Equid Deaths (Including Euthanasia), by Cause of Death and by Year



*Includes respiratory (2.8%, 7.3%), neurologic (6.6%, 0.0%), reproductive (0.0%, 1.6%), and dystocia (0.1%, 0.0%).

For equids aged 6 months or older, the percentages of deaths were similar in 1998 and 2005 across all causes of death (figure 3) with the exception of "other" known causes of death, which was higher in 1998 than in 2005, likely because of additional choices added to the 2005 questionnaire. Commonly reported causes of death in this age category in 1998 and 2005 were old age, colic, and injury/wounds/trauma. "Other" known causes of death in 1998 included cancer, heart disease, poisoning, lightning strike, liver disease, and birth defects. In 2005, "other" known causes of death included heart attack, snake bite, stroke, ruptured vessel, heat stroke, endocrine disease, and pigeon fever.

Figure 3. For Equids 6 Months or Older, Percentage of Equid Deaths (Including Euthanasia), by Cause of Death and by Year



*Includes respiratory (3.1%, 2.7%), neurologic (1.8%, 3.3%), reproductive (0.5%, 0.9%), and dystocia (1.3%, 2.3%).

Summary

A high percentage of death among foals aged less than 30 days and equids aged more than 30 days to less than 6 months was attributed to unknown causes in both 1998 and 2005. Identifying these unknown causes is an area for further study. If the cause of death is found to be preventable, it may be possible to prevent future equid deaths.

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